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Before the Board of Patent Appeals and Interferences

In re the Application

Inventor	:	Kurt, R.
Application No.	:	10/539,362
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For	:	USE OF BI-LAYER PHOTOLITHOGRAPHIC RESISTS AS NEW MATERIAL FOR OPTICAL STORAGE

REPLY BRIEF

On Appeal from Group Art Unit 1794

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Date: December 9, 2010

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TABLE OF CONTENTS

TABLE OF CASES

I. REAL PARTY IN INTEREST

Reference is made to the statements made in Appellant's Appeal Brief and Examiner's Answer.

II. RELATED APPEALS AND INTERFERENCES

Reference is made to the statements made in Appellant's Appeal Brief and Examiner's Answer.

III. STATUS OF CLAIMS

Reference is made to the statements made in Appellant's Appeal Brief and Examiner's Answer.

IV. STATUS OF AMENDMENTS

Reference is made to the statements made in Appellant's Appeal Brief and Examiner's Answer.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Reference is made to the statements made in Appellant's Appeal Brief and Examiner's Answer.

VI. GROUNDS FOR REJECTION TO BE REVIEWED ON APPEAL

Reference is made to the statements made in Appellant's Appeal Brief and Examiner's Answer.

VII. ARGUMENT

I. Rejection of claims 1, 9-11, 13-14, 16-17 and 20-23 under 35 USC §103

In response to the arguments provided in the Examiner's Answer, dated October 27, 2010, Appellant respectfully submits that the Answer fails to show that the cited reference includes all the elements recited in the independent claims.

The Examiner's Answer maintains that the subject matter claimed is disclosed by the cited reference as the cited reference includes a "thickness of the recording layers [that] falls within applicant's disclosed range, i.e., applicant relies upon an integer multiple of a quarter wavelength of a second electromagnetic radiation to describe the a [sic] distance between a reflective surface of the information layer and a reflecting surface of at least one additional layer. " (see EA, page 4, lines 6-10).

The Examiner's Answer further states, "[a]s applicant's [sic] point out in the Appeal, the thickness value of the combined first and second recording layers disclosed in the '551 reference may be up to 100nm. This would meet the thickness limitation based upon a read beam of 400nm. *Applicant does not specify the read beam wavelength. Nor does applicant specify the integer which,*

in fact, could be zero. Further, applicant does not specify which surface is the 'reflecting surface of said at least one additional layer', i.e., is it the surface of the metal layer, the surface of the layer adjacent the information layer, etc.? Therefore, as applicant's definition of the 'distance' or thickness value is a broad range, the medium as disclosed in the '551 reference would be capable of meeting this definition and, therefore, would be capable of achieving the interference effect claimed." (see EA, page 4, lines 11-19). (emphasis added)

In reply to the Appellant's argument, the Examiner's Answer further states, "Applicant states that the previous Office Action infers that it would be inherent that the thicknesses may be selected to satisfy the elements recited in the claims. This is not the position taken by the examiner in the previous Office action. As stated, the possible range of thicknesses for the multiple layers disclosed in the reference and the possible range of thickness for the layers claimed overlap. The layers are formed of the same materials and can be of the same total thickness and, therefore, would be capable of achieving the claimed properties. While applicant may be claiming the parameters of the medium in a different way, i.e., the total thickness of the sub-layers is dependent upon the read wavelength, the reference still meets the limitations. At a 400nm read wavelength, the total thickness of applicant's sub-layers could be 100nm. This is met by the reference. Further, applicant does not specify the 'reflecting surface' of the at least one additional layer. That is to say, if the reflecting surface is the surface of the substrate, the distance definition would include all of the layers between the substrate and the outer surface of the information layer. If the reflecting surface

is the surface of the metal layer, the distance would include all layers between the surface of the metal layer and the outer surface of the information layer. Therefore, depending on which definition of the 'reflecting surface' is used will result in very different values. Due to the possibility of using different wavelengths, different integer multiples, and different reflecting surfaces (the 'distance' definition could be interpreted to include the thickness of the dielectric layer, reflective layer, etc.), the possible thickness (distance) range is large and overlaps the thickness range disclosed in the '551 reference." (see EA, page 5, line 12-page 6, line 12.

Appellant respectfully disagrees with the remarks made in the Examiner's Answer.

Aoshima (referred to as D1), discloses an optical recording medium including a substrate (40), a protective layer (30), a first recording layer (11) and a second recording layer (12) located in the vicinity of the first recording layer. When the optical recording medium is irradiated with a laser beam, the element contained in the first recording layer and the second recording layer are mixed by the laser beam and a region whose reflection coefficient has been changed is formed, whereby information is recorded. In addition, D1 discloses a first dielectric layer 21 between the first recording layer and the protective layer 30 and a second dielectric layer 22 between the substrate 40 and the second recording layer 22 (see figure 1). D1 further discloses a reflective layer 50 positioned between the second dielectric layer 22 and the substrate 40. (see figure 3).

D1 further discloses that each of the first and second recording layers may be between 3 and 200nm (see par. 0063) and that the total thickness of the first and second layers is less than 100nm and preferably less than 50nm (see para. 0077 "[t]he thickness of the first recording layer 11 and the second recording layer 12 is not particularly limited insofar as the element contained in the first recording layer 11 as a primary component and the element contained in the second recording layer 12 as a primary component at a region irradiated with a laser beam ... are quickly fused or diffused to quickly form a region where the primary component element of the first recording layer and ... the second recording layer are mixed, but the total thickness of the first recording layer 11 and the second recording layer 12 is preferably equal to or less than 100nm and the more preferably equal to or less than 50nm.").

D1 further discloses that the thickness of each recording layer is preferably between 1nm and 30nm and that the thickness may be determined by a ratio of the first thickness to the second thickness being in the range of 0.2 to 5.0 (see para. 0080, "[t]he individual thickness ... of the first recording layer 11 is preferably from 1nm to 30nm and the thickness of the second recording layer 12 is preferably from 1nm to 30. Further, it is preferable to define the ratio of the thickness of the first recording layer 11 to the thickness of the second recording layer ... to be from 0.2 to 5.0.").

D1 provides an example of the optical medium including a second dielectric layer of 60nm, a second recording layer containing Cu, having a thickness of 6nm and a first recording layer containing Si having a thickness layer

of 6nm (see para. 0123). D1 discloses ten (10) working examples with either the first or second recording layer having different primary components. In each case, the thickness of the materials is the same. D1 further disclose tests made with the ten working examples using a laser beam set to 405nm. (see para. 0159).

However, nowhere does D1 provide any suggestion that the total thickness of first and second recording layers (in combination with the second dielectric layer, as shown in Figure 3) is determined as a function of the wavelength of a second electromagnetic radiation, as is recited in the claims (i.e., claim 1 "...the at least one additional layer comprising at least one sub-layer being a metal, wherein a distance between a reflecting surface of the as-deposited information layer and a reflecting surface of said at least one additional layer is adjusted to be an integer multiple of a quarter wavelength of a second electromagnetic radiation.").

In fact, the example(s) provided by D1, disclose a total thickness of 72nm (12 nm for first and second recording layers and 60nm for the second dielectric layer) and a wavelength of 405nm. This combination fails to fall within the scope of the elements recited in the claims.

D1 fails to provide any teaching or suggesting for setting the thickness of the recording layers (and the dielectric layer) as a function of the wavelength of the electromagnetic radiation.

The Examiner's Answer refers to D1 for teaching a combined thickness value of the first and second recording layer being 100nm and "would meet the thickness limitation based upon a read beam of 400nm."

However, **nowhere does the D1 provide any desire to operate in such a configuration.** Rather, the selection of a 100nm thickness in conjunction with a 400nm wavelength is based on the reading of the present invention.

"[W]hen prior art references require a selected combination to render obvious, there must be some reason for the combination other than the hindsight gained from the invention itself, i.e., something in the prior art as a whole must suggest the desirability and, thus, the obviousness, of making the combination." *Uniroyal Inc. v. Rudkin-Wiley Corp*, (citation omitted).

In this case, the combination of a thickness of 100nm with a wavelength of 400nm is a combination that is developed from a reading of the instant application and not a combination that the prior art, when read as a whole, suggests.

Thus, the subject matter recited in the independent claims is not rendered obvious by D1 as D1 discloses I recording layers to be significantly smaller than the 100nm thickness proposed.

The Examiner's Answer asserts that the Appellant fails to disclose the value of the integer and that this value may be zero. (see page 4, lines 14-15).

However, an integer value of zero would result in a distance value of zero and consequently a zero thickness for the information layer. As such, an

interpretation of the claims would be contrary to the teaching of the invention as this interpretation would render the subject matter claimed impractical.

Interpretation of the claims must also be consistent with the interpretation that one of ordinary skill in the art would reach. See *In re Cortright*, 165 F.3d 1353, 1359, MPEP 2111.

In this case, the interpretation of a zero integer value is not consistent with the teaching of the invention or something that would be understood by those skilled in the art. Thus, appellant submits that arguing that the integer value may be zero is merely an overreaching of interpreting the subject matter claimed to support the rejection of the claims.

For the remarks made herein in response to the remarks and assertions made in the Examiner's Answer, appellant submits that D1 cannot render unpatentable the subject matter recited in the claims as D1 fails to disclose the element of selection of layers based on an integer multiple of a quarter-wavelength of the read radiation and, further, fails to provide any motivation or suggestion for determining a distance based on a wavelength of the read radiation source, as is recited in the claims.

Appellant submits that the subject matter of the independent claims is patently distinguishable from that disclosed by D1 as D1 fails to disclose at least one material element recited in the claim.

2. Rejection of claims 2-7 and 19 under 35 USC §103(a)

Claims 2-7 Depend From an Allowable Base Claim

Claims 2-7 depend from independent claim 1, which has been shown to include subject matter not disclosed by D1.

Suzuki (D2) fails to provide any teaching regarding setting a distance between layers based on a wavelength of a radiation source that would correct the deficiency found to exist in claim 1 and, consequently, in the aforementioned dependent claims.

Appellant respectfully submits that claims 2-7 are allowable at least for their dependence upon an allowable base claim.

In view of the above, Appellant submits that the above referred-to claims are patentable over the teachings of the cited references.

With regard to independent claim 19, this claim includes subject matter similar to that recited in the other independent claims and, thus, is also patently distinguishable over the combination of D1 and D2 for remarks similar to those presented herein with regard to the other independent claims.

Appellant submits that claim 19 is patently distinguishable over the cited references as the combination of the references fails to disclose a material element of the claims.

VIII. CONCLUSION

In view of the above analysis, it is respectfully submitted that the referenced teachings, whether taken individually or in combination, fail to render obvious the subject matter of any of the present claims. Therefore, reversal of all outstanding grounds of rejection is respectfully solicited.

Respectfully submitted,
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IX. CLAIMS APPENDIX

Appellant refers to the statements made in Appeal Brief.

X. EVIDENCE APPENDIX

Appellant refers to the statements made in Appeal Brief.

XI. RELATED PROCEEDING APPENDIX

Appellant refers to the statements made in Appeal Brief.